WHITE PAPER

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Acronis®
Backup & Recovery 10™
Overview

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Executive Summary

Acronis® Backup & Recovery™ 10 is the next generation data protection and disaster recovery solution from Acronis. It is based on the patented disk imaging technology of the award-winning Acronis® True Image™ product line that protects more than three million computers worldwide.

Acronis Backup & Recovery 10 enables organizations to recover entire Windows, Linux or Virtual machines in minutes, not hours, by simplifying and standardizing the recovery process into easy-to-follow procedures. Any IT staff can be enlisted to carry out recoveries, freeing highly-skilled IT personnel from recovery-related tasks. In a major disaster, mass recovery can be performed concurrently with a high level of automation, avoiding mostly manual and time-consuming processes.

To ensure high performance backup, Acronis Backup & Recovery 10 captures entire disk images of a system and saves them into disk storages such as SAN, NAS, direct attached storage, RAID, and re-writeable optical disks. Storage devices such as tape drive and libraries are also supported. To leverage maximum cost-saving, Acronis Backup & Recovery 10 makes available a fully integrated backup data deduplication application (Acronis Backup & Recovery 10 Deduplication) that can help to reduce overall storage requirements by 80-90%.

Acronis Backup & Recovery 10 Deduplication also simplifies remote office backup. It enables source-level deduplication for the remotely located machines so backups can be ran over the WAN using the minimum possible bandwidth. This eliminates the need for disk or tape storage devices in the remote location, a major step in simplifying remote office backup management. Deduplication reduces overall data storage costs significantly enough to extend deduplication efforts to include the massive amount of data carried on workstations and laptop computers.

Acronis Backup & Recovery 10 comes in seven different editions to suit the needs of small and large organizations. Centralized management capability makes it possible to carry out all backup and recovery operations from a single console, including tasks related to workstations, Windows servers, Linux servers or virtualized servers in VMware, Microsoft Hyper-V, Citrix XenServer or Parallels. A new monitoring dashboard is also available to provide a high-level overview of the health of the entire backup and recovery infrastructure for operation management.

Acronis Backup & Recovery 10 features a new scalable architecture allowing administrators to scale from protecting a single workstation in a home office to thousands of workstations and servers in a large enterprise. Resources such as disk capacity and backup servers (called Storage Nodes) can be added on demand and only when needed to handle new workload, ensuring minimum startup cost.

The Next Generation Backup and Recovery Solution from Acronis

Acronis Backup & Recovery 10 is based on the popular, award-winning Acronis True Image Echo product line, installed in millions of locations around the world. The new product line introduces many enhancements and new capabilities including the following:

New! Scalable Architecture

With Acronis Backup & Recovery 10 organization can scale its backup and recovery infrastructure to meet growth needs. Its new scalable architecture consists of the Acronis Management Server, Acronis Storage Nodes and protected machines, and it enables Acronis Backup & Recovery 10 to scale from protecting a single computer in a home office to cover as many as thousands of computers in a large, multiple-site organization. More storage capacity can be added to a Storage Node when necessary, and new Storage Nodes can be added on demand when backup load increases.

New! Backup Image Deduplication

Acronis is the first in the industry to integrate system recovery, data protection and data deduplication in a single product. With backup image deduplication, organizations can reduce storage capacity required for backup images up to 90% and retain months of backup rather than mere weeks.

New! Centralized Management Console

A re-designed management console enables administrators to manage backup operations anywhere on the network, including tasks related to distributed machines across WANs. Creating new backup policies, starting backup jobs, managing storage and devices and other tasks can be performed from the console. The console is designed to be as intuitive as possible, enabling administrators to manage an entire Acronis Backup & Recovery 10 infrastructure with a minimum of training.

New! Management Dashboard

A new high-level management dashboard offers a bird's eye view of all backup and recovery operations. Results for all jobs are displayed in summary and any issues or failed jobs are color-coded so they can be identified at a glance.

New! Advanced Scheduling

Acronis Backup & Recovery 10 includes templates for industry-standard backup rotation schemes such as Grandfather-Father-Son and Tower of Hanoi, and allows the creation of customized schemes tailored to serve all backup scheduling needs. Backup jobs can also be event-triggered by user logon, disk space changes or any event that is captured in the Windows Event Manager: this capability is especially useful for achieving higher-efficiency workstation backups.

New! Backup Security Enhancement

Backup images can be encrypted with the top industry-standard encryption algorithms and encryption strengths from 128 to 256bit can be selected based on user need. Backup data transmission between client and server can be encrypted to prevent unauthorized access to confidential information.

Enhanced! Support for Virtualized Environment

The Acronis Backup & Recovery 10 family includes the Acronis Backup & Recovery 10 Advanced Server Virtual Edition, especially engineered for virtualized environments running on VMware®, Microsoft® Hyper-V, Citrix® Xenserver™ or Parallels® platforms. It enables organizations to restore single files, folders, volumes or entire virtual machines, and supports agent-based backups, VMware Consolidated Backup (VCB), or advanced agent-free backup through the respective vendors' APIs.

Dissimilar Hardware Restore

Universal Restore® is a technology delivered by Acronis to enable recovery of Windows systems to dissimilar hardware platforms. Universal Restore technology can eliminate the need to provide identical standby servers and save cost, and save time when migrating workstations to new hardware. With it, users do not have to go through the tedious and error-prone process of copying drivers and editing numerous Windows registry keys to make a recovery work on a dissimilar hardware. With Universal Restore, the recovery process is streamlined to allow any IT-trained personal to perform the restore consistently, in minutes rather than hours or days. Administrators can add new drivers into the recovery CD-ROM in advance, further simplifying the recovery into a machine of a different make and model.

Meeting Recovery Time Objectives

Two challenges always come to mind during backup and recovery preparation - backup performance and Recovery Time Objective (RTO), which is the maximum time allowed to recover a system after a failure. This section will discuss RTO and the different factors affecting it.

The Difference Between Data recovery and System Recovery

Many organizations are performing data backup of their systems. It can be in the form of a simple folder-to-folder copy over the network, or escalate all the way to complex client-server architecture with disk and tape storage systems on the back end. Some of these solutions only back up application data; others also back up the files related to the operating system. However, having a backup copy of the operating system does not mean having a system recovery solution that can carry out fast and consistent system recoveries.

There are two main hurdles to clear in order to confidently meet an RTO goal.

1. Recover the operating system and application to a consistent running state.
2. Recover the required copy of data back into the system.

The usual way to recover a system requires IT to re-install the operating system and backup application before data can be recovered. Then, patches and backup application configurations are required. The entire process can take up to four hours before the first byte of data is restored. This mostly manual process requires significant expertise to install the backup application and configure it to work with the existing backup infrastructure.

In today's fast-paced business environment, a system recovery solution that simplifies and automates the process is needed so that the system can be recovered quickly. Acronis Backup & Recovery 10 has an integrated system recovery capability that enables IT to recover a system and its applications to a consistent state in less than an hour, with a few simple steps. Acronis patented imaging technology allows complete system recovery without the need to re-install and re-configure the backup application. All system and application settings are recovered to the state at which the backup was done.

With Acronis Backup & Recovery 10, recovery can be carried out by any IT staff, freeing highly-skilled IT resources from recovery related tasks.

Recovering to Dissimilar Hardware

Recovering a system onto dissimilar hardware from a failed system often results in a failed recovery. Due to the differences in hardware and drivers, the system usually cannot start normally after a full restore. Highly-skilled systems engineers are needed to carry out procedures such as copying and replacing drivers, editing and creating Windows Registry keys. Often, this tedious, error-prone process requires hours or even days to complete, threatening business continuity.

Acronis Backup & Recovery 10 Universal Restore is an option that solves the problem quickly. It simplifies and streamlines the recovery process for dissimilar hardware restores. With Universal Restore, systems can be recovered to dissimilar hardware in minutes, not hours or days. Drivers for the new hardware can be added to the recovery CD-ROM in advance or during the recovery process, and Universal Restore will automatically configure the underlying operating system settings so that the recovered system will run on the new hardware.

Acronis Backup & Recovery 10 Universal Restore option frees organizations to use dissimilar hardware for standby purposes, eliminating the need to provision identical hardware for recovery. Systems can generally be recovered in less than an hour, eliminating the need for expensive clustering solutions for most business-critical systems.

The Natural Human Factor in Disaster Recovery

Major disasters that have happened in recent times have taught us new lessons about disaster recovery (DR). Organizations affected in these disasters learned that the DR plan previously thought would suffice did not go according to plan.

Many of the affected organization had to perform the recovery at the DR site without the personnel responsible for it. Due to the fact that these people themselves were affected by the disaster. They learned that recovery should not be dependent on the selected few IT staff members that have special knowledge of the systems and the technical know-how to recover them.

To be sure that existing staff can handle a disaster; the recovery process must be as simple to operate as is technologically possible and has minimum dependency on system documentation. Any time spent looking for OS/application CDs, license keys, or running through system and network documents will delay recovery of line-of-business processes by hours, even days.

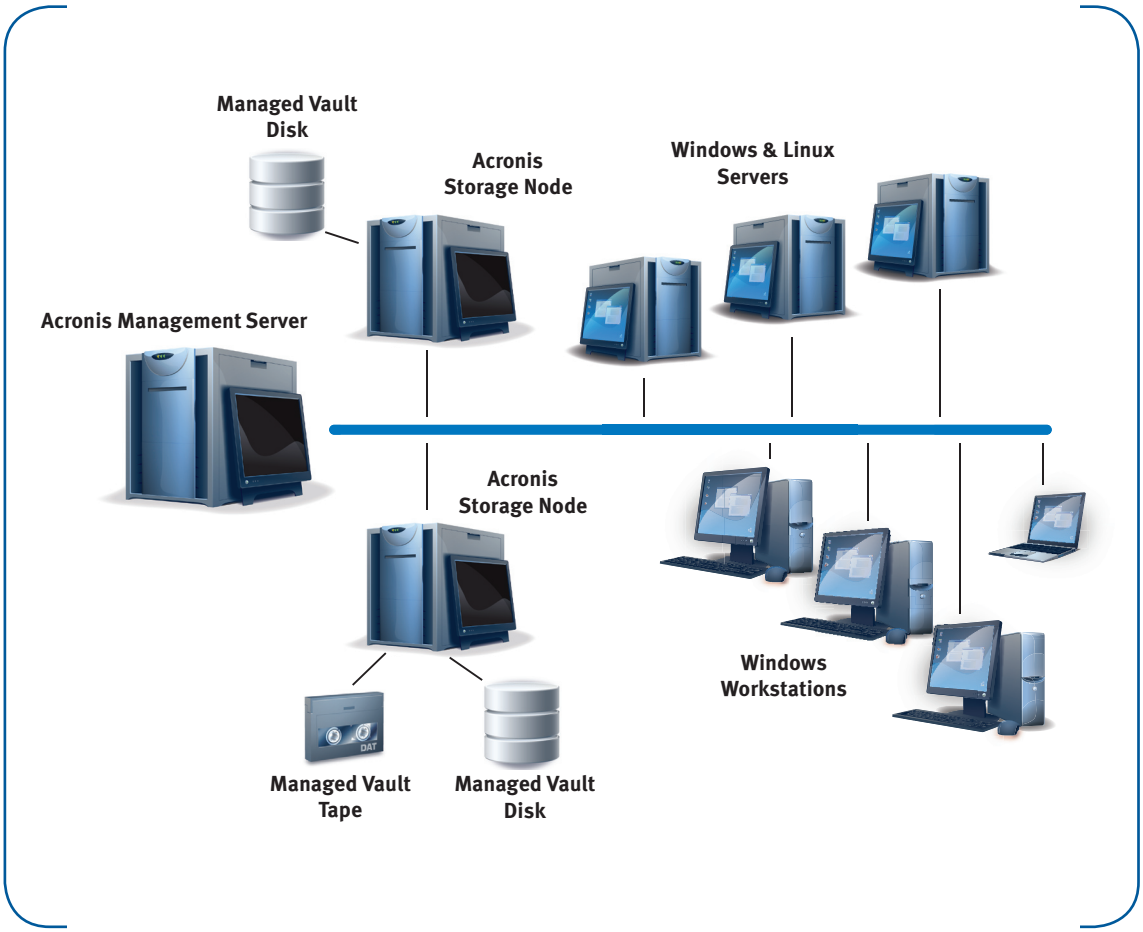
Remote Recovery

Organizations performing remote office and workstation/laptop backups also appreciate the convenience of performing a remote recovery, as it costs time and money to send IT staff to remote locations for that purpose. Remote restores eliminate the need to travel to a remote location to recover a machine. In certain cases, remote recoveries are the only option available for security reasons.

Multiple machines located at different locations can be recovered at the same time by one administrator from the administrator console. The machine can be booted through network boot (through Acronis PXE Server), from the Acronis Rescue Media CD-ROM or the Acronis Startup Recover Manager via the boot prompt. Once the agent is running, a connection can be established remotely from the management console and the administrator can execute recovery tasks directly.

Enterprise Scalability

Acronis Backup & Recovery 10 is designed to meet the needs of distributed network infrastructures and can scale seamlessly to support thousands of machines. Acronis Backup & Recovery infrastructures scale by adding resources such as disk space in the form of vaults (backup containers), and Acronis Storage Nodes to handle new backup workload, while maintaining the ability to centrally manage the entire infrastructure. A single Acronis Backup & Recovery 10 domain can scale up to 20 Storage Nodes with every storage node managing 20 disk/tape vaults, all managed by one management server. Backup data is transmitted directly from the managed machines (backup clients) to the storage nodes and saved into the vaults.



The Acronis Backup & Recovery 10 Management Server

The Acronis Backup & Recovery 10 Management Server is the central server that drives all data protection and recovery activities within an enterprise. It provides a single entry point for administrators to connect from a centralized management console and manage the entire Acronis Backup & Recovery infrastructure.

All backup policies are managed and tracked on the management server, and all backup and recovery jobs can be executed and monitored. It maintains a list of registered Acronis Backup & Recovery Storage Nodes, vaults and managed machines, and the respective configuration and synchronization databases.

The management server also maintains a centralized log repository that tracks the results of all activities within the Acronis Backup & Recovery infrastructure. Reports are generated by the management server using the information from the centralized log repository and the configuration database.

The Acronis Backup & Recovery 10 Storage Node

The Acronis Backup & Recovery Storage Node performs the role of controlling and optimizing storage resources. It reduces the workload on the managed machines by taking over service tasks such as backup image retention, consolidation, validation and expirations, which would otherwise consume CPU resources on the managed machines.

The storage node is a key to creating a highly flexible and scalable infrastructure. With it, administrators can add storage resources whenever the workload increases. It supports devices such as local disks, network shares, SAN attached disks, NAS disks and tape libraries. Storage nodes are usually located near the managed machines it protects and can be managed by a management server anywhere on the network.

The storage node also performs storage-side backup image deduplication. By detecting and eliminating duplicated files and blocks, deduplication can typically reduce storage utilization by as much as 90%.

Administrators can choose to enable or disable deduplication on a per-vault basis, and up to 20 vaults can be managed by a single storage node.

To ensure backup image security, backup images can be either encrypted by the managed machine or the storage node. Using storage node encryption effectively reduces the CPU load on the managed machine during backup and encryption.

Every storage node in an Acronis Backup & Recovery infrastructure is registered to, and managed by, a management server. The backup administrator performs all configurations from and centralized management console.

Centralized Management

Managing data backup for a large environment can be a tedious job when hundreds or thousands of machines are involved. Acronis Backup & Recovery 10 introduces a redesigned management console (below) that enables an administrator to perform centralized policy-based management.

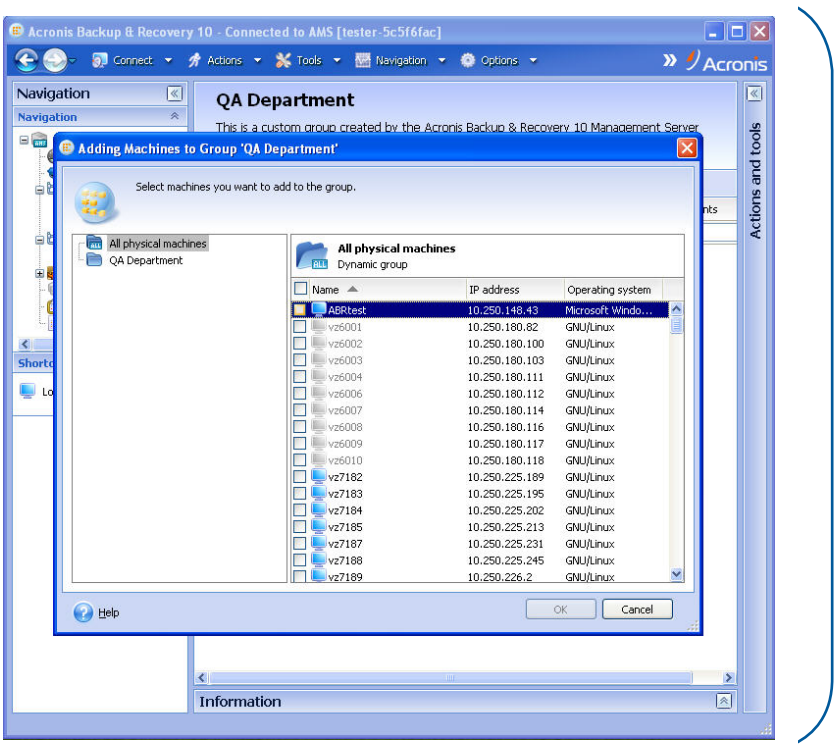
From anywhere on the network, the administrator can connect to the management server to perform administrative tasks through a management console on a desktop or laptop.

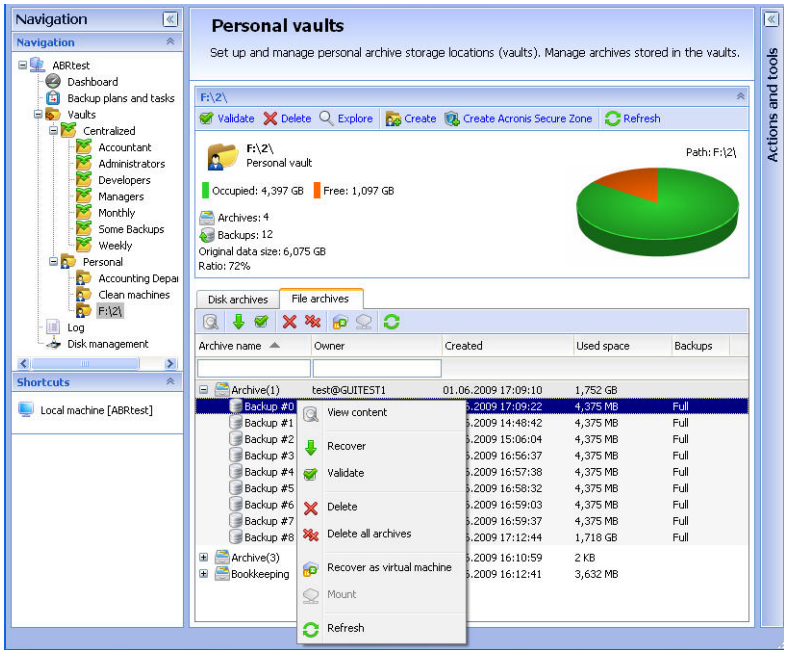
The Acronis Backup & Recovery 10 Management Console

From the management console, the administrator manages all backup policies, machines (physical and virtual), storage nodes and vaults. It is highly intuitive and can be operated with minimum training.

Policy-based management eliminates the need to create backup jobs on each individual machine. Instead, a standard policy can be created and applied to a group of machines, saving time and avoiding backup jobs that deviate from a backup policy that an organization may already have in place. For example, a policy can be created for full backups of all servers belonging to finance, specifying the backup destination, retention requirement and day and time the backup should run. Policy-based management can greatly reduce the number of backup jobs that an administrator needs to individually maintain in the system. Without it administrators may have to define and manage thousands of backup jobs for an environment with thousands of managed machines.

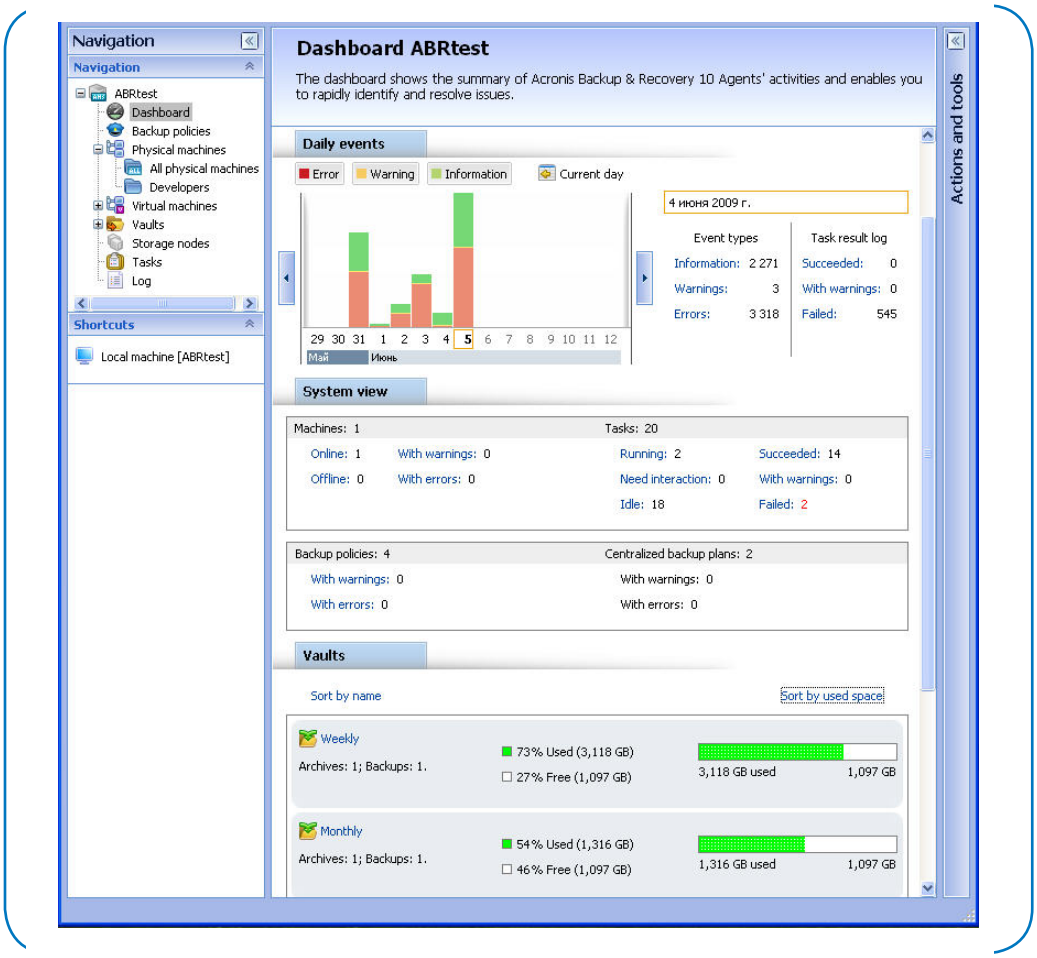
All managed machines, physical or virtual, are registered to the management server and listed on the management console. Groups can be created to organize managed machines into logical groups to facilitate policy management and reporting at group level. A machine can belong to more than one group for maximum flexibility. All storage node management and configuration activities are done through the management console. Managed vaults are created under a storage node and configurations such as deduplication, encryption and storage settings can be specified. The administrator can also drill down into archives (backup image sets) that exist in the vault and initiate tasks such as consolidation, validation, expiration and cleanup.





From the console, all running jobs are listed under Tasks, from which an administrator can monitor all progress and terminate jobs. Job logs enable the administrator to perform advanced troubleshooting on failed jobs.

Management Dashboard



The Acronis Backup & Recovery management console includes a management dashboard that provides a high-level status view of the entire backup and recovery infrastructure. It eliminates the need to connect to every individual machine to check its status, nor running through every backup log to report on the outcome.

The management dashboard is the perfect tool for operation management to quickly get a status snapshot of the entire backup infrastructure and identify the hotspots. Rectifying actions can then be prescribed in the shortest possible time.

Backup Image deduplication

Primary storage in small and large companies alike is growing at 50% - 100% a year. IDC research conducted in the second half of 2008 shows a 3,000% increase in the amount of global digital data created and stored on a worldwide basis over the past three years. Deduplication is a proven way to tackle the data storage issue, eliminating redundant data in a storage system and promising to reduce backup data volume up to 90% or more. Now, administrators can chose to either stretch storage purchases over a much longer period of time or store more data on existing resources.

But until the advent of Acronis Backup & Recovery Deduplication, it was out of the financial reach of small organizations, and some large ones; they included expensive proprietary hardware and most products based their pricing on the volume of deduplicated data. As a result, organizations that could afford it tended to protect only their servers, not their workstations. With introduction of a software-only Acronis Backup & Recovery Duplication option priced on a per machine basis, deduplication is made affordable for small and large companies alike, and its benefits can be applied to workstations as well as servers.

Storage Capacity Optimization for Backup Images

Data from backup images typically creates the most duplication. In the case of backup for one hundred Windows machines, operating system files of about 2GB in a Windows machines is almost identical, and would be duplicated one hundred times when backup is taken the first time for every server. If the organization has a policy to retain three full backups for every server, the total amount of storage required for the Windows operating system alone would be around 600GB, in fact only 2GB is unique.

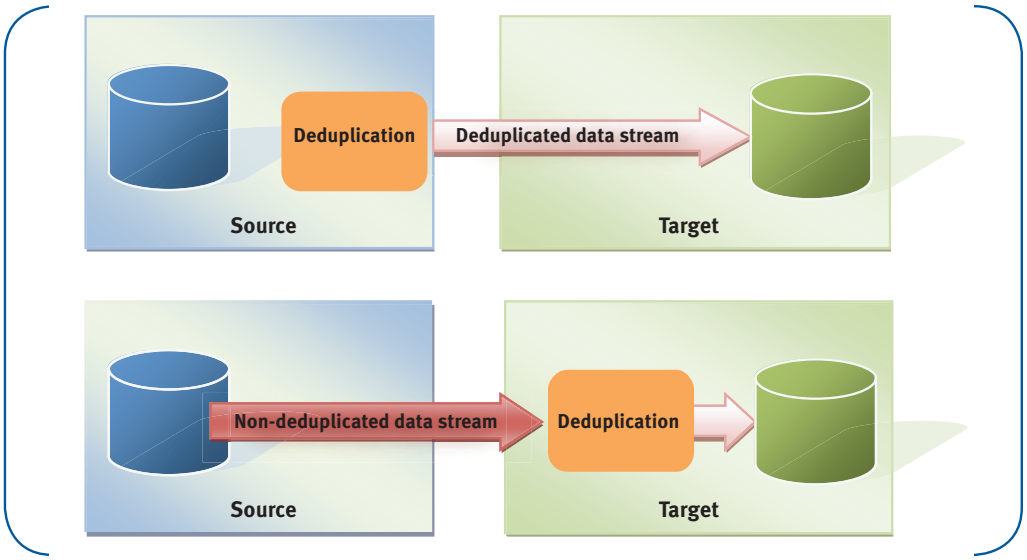
In fact, any duplicated files or blocks that exists within or across these servers, only one copy will exist after deduplication. For user created data such as user home directories, significant duplication of files and bocks may also exist and these duplications will also be eliminated and storage saved.

Using Acronis Backup & Recovery 10 Deduplication in this case has the following benefits:

1. Eliminate identical blocks of data and save storage space and cost
2. Enjoy the speed, reliability and random access nature of disk
3. Support much more concurrent backup and recovery jobs
4. Support much longer retention periods on disk, typically 3-6 months
5. Minimize the need for expensive and unreliable tape library storage devices

Network Bandwidth Reduction

Acronis deduplication uniquely allows its user to choose between deduplication at source and at storage. When deduplication at source is selected, the backup client performs the deduplication process before transmitting the data to the storage node, thus saving bandwidth requirement. When deduplication at storage is selected, the backup client transmits all backup data to the storage node and deduplication is done by the storage node, thus saving CPU resource on the backup client.



Deduplication at the source enables remote office backup over WAN links. As backup data is deduplicated before transmission, bandwidth requirement is typically reduced by 80-90%. By enabling deduplication at the source for remote office backups organizations can enjoy the following benefits:

1. Eliminate tape or tape library storages at the remote sites
2. Minimize manual intervention at the remote sites for tape media management
3. Eliminate need to transport backup tapes to central location
4. Eliminate data leakage risks during tape transportation

Conclusion

Acronis Backup & Recovery 10 is engineered to provide simple and cost-effective data protection and system recovery to organizations of all sizes. It enables organizations to standardize disaster recovery procedures easily across their physical and virtual servers. A data protection solution with integrated system recovery, it effectively reduces RTO from typically 4hrs to less than 1hr, greatly reducing the need for expensive clustering solution for most applications. Acronis Universal Restore technology simplifies restoration onto dissimilar hardware platforms to procedures similar to standard Acronis recovery procedures, enabling staff with basic IT training to perform recoveries.

Acronis Backup & Recovery 10 optimizes storage resource utilization with its integrated backup deduplication engine and effectively reduces storage requirements by 90% or more. This makes it possible for organizations to save on storage costs and retain data much longer than ever before on disk, minimizing the need for expensive, slow and unreliable tape libraries. Deduplication also minimizes the volume of backup data traffic transmission through the network, minimizes the need for a dedicated backup LAN and enables remote office backup over the WAN.

With enterprise-class scalability, Acronis Backup & Recovery 10 infrastructures are able to grow on-demand to handle increased workloads. Startup cost with Acronis Backup & Recovery 10 is minimal and organizations only invest in more infrastructures when needed. As the environment grows, centralized management capability is maintained and administration productivity increases, while policy-based management ensures that the number of backup jobs remain manageable.

With Acronis Backup & Recovery 10, organizations can now build a backup and recovery infrastructure that is scalable, cost-effective, resource optimizing and easily manageable; and meet recovery time objectives and disaster recovery objectives with ease.

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For additional information, please visit http://www.acronis.com

Enterprise/SMB sales:
Email: sales@acronis.com
Call +1 877 669-9749

OEM inquiries:
Email: oem@acronis.com
Call +1 650 875-7593

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